

Title (en)

Method of using nitrogen based compounds in beam-induced processing

Title (de)

Verfahren zur Verwendung von stickstoffbasierten Verbindungen bei strahleninduzierter Bearbeitung

Title (fr)

Procédé pour l'utilisation de composés à base d'azote dans le traitement induit par faisceau

Publication

EP 2309020 B1 20140305 (EN)

Application

EP 10178148 A 20100922

Priority

US 56570709 A 20090923

Abstract (en)

[origin: EP2309020A1] A system for beam-induced deposition or etching, in which a charged particle or laser beam can be directed to a work piece within a single vacuum chamber, either normally incident or at an angle. Simultaneously with beam illumination of the work piece, a deposition or etch precursor gas is co-injected or premixed with a purification compound and (optionally) a carrier gas prior to injection into the process chamber. The beam decomposes the deposition precursor gas to deposit a film only in areas illuminated by the beam, or decomposes the etch precursor gas to etch a film only in areas illuminated by the beam. Undesired impurities such as carbon in the deposited film are removed during film growth by interaction with adsorbed species on the work piece surface that are generated by interaction of the beam with adsorbed molecules of the film purification compound. Alternatively, the film purification compound can be used to inhibit oxidation of the material etched by the etch precursor gas. By co-injecting or premixing the deposition or etch precursor gas and film purification compound prior to injection, the deposition or etch process may be optimized with respect to growth/etch rate and achievable material purity.

IPC 8 full level

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CPC (source: EP US)

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Cited by

CN113403572A; FR3011540A1; WO2015052396A1

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